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THE PLANT DISEASE REPORTER

Issued By

Division of Mycology and Disease Survey

Volume XV Number 12

October 1, 1931

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Vol. XV October 1, 1931 Number 12

TOBACCO DISEASE SURVEY

FIELD SURVEY OF TOBACCO IN NEW YORK, 1931

J. A. B. Nolla

Plantings of tobacco in 17 farms in Chemung County were inspected on August 26. The number of acres covered amounted to 86.75.

The cutting of plants is well under way, a large part of the crop being now in the barns.

It has been very difficult to ascertain which types of tobacco are grown in the county; apparently the predominant variety is one called Connecticut Havana, and there is some Wisconsin Hybrid #38.

It can be said, in a general way, that the crop has been rather free of injurious diseases. On every farm was found a very uniform stand of vigorous plants.

In none of the farms visited was seed treated, though the seedbeds were steamed. In two of the farms Bordeaux mixture was applied to the beds for the control of wildfire (Bacterium tabacum).

A three-year rotation has been followed in all except three farms. The soil is generally of the Chenango Silt Loam type. Fertilization has consisted of the application of 10 to 20 tons of barnyard manure per acre; in one farm a 5-10-5 commercial fertilizer was used at the rate of 480 pounds per acre, in addition to barnyard manure.

Mosaic (virus) was found in all farms, ranging in severity from less than 1 per cent to about 95 per cent. In a field of 5 acres about 95 per cent of the crop was affected. Here the disease spread before topping causing considerable damage. From the information gathered it appears that the unusual spread can be traced to improper handling of the seedbed. The bed was located on an old site but the soil was changed and sterilized. The seed came from the same source as that used by other growers who had only very little mosaic. Ten rows of plants from this bed grown on a second farm showed the same general infection while adjacent plants from another bed did not show it so severely. The widespread occurrence of mosaic in this case is apparently to be ascribed to much use of chewing tobacco during seedbed operations.

In some farms there was found evidence indicating that grasshoppers and flea-beetles must have been a factor in the spread of mosaic.

Wildfire was found in 7 farms. The seedbeds on these farms had shown the disease in three cases, and Bordeaux was applied in only one. It seems that at least in three farms wildfire was carried from the beds to the field. The disease was, at the most, only moderately severe in one farm. In general, only the lowermost leaves were affected. The Wisconsin tobacco appears to have been more susceptible than the Connecticut Havana.

Potash hunger was observed in two large spots in one farm (5 per cent) and found only in one other farm, where a few plants showed the symptoms.

Ring spot (virus) was discovered in four farms but very few scattered plants showed the disease.

TOBACCO DISEASE SURVEY IN MARYLAND - 1931

By R. A. Jehle and J. W. Heuberger

A total of forty-four tobacco fields were inspected in five southern Maryland counties. Inspections were begun on July 31 and extended to September 9. The results of this survey are given in the accompanying table (Table 4). Losses from diseases stated in the table are the total estimated losses from the disease and not necessarily the losses at the time of inspections. Much rainy weather followed the earlier inspections and the losses were estimated from observations made at the time the crop was housed.

The most striking thing brought out by this survey was the fact that severe losses from Wildfire (Bacterium tabacum) in the field were experienced only when the fields had been set from plants which came from seedbeds in which the disease had been found. Furthermore, most of the severe and very severe losses occurred in fields set out from seedbeds in which only a few infected plants had been found. It will be noted that all severe and very severe losses occurred when Wildfire was found in the seedbed, part of the

Table 4. Summary of tobacco field survey in Maryland, 1931 (by R. A. Jehle and J. W. Heuberger).

County	Total number fields inspected	Number fields with following estimated loss from Wildfire	Number fields set from beds free from Wildfire	Number fields set from beds with Wildfire	Losses from Mosaic
Anne Arundel	9	2 slight	1	1	5 slight
		2 moderate	1	1	3 moderate
		4 severe	0	4	1 severe
		1 very severe	0	1	
Calvert	8	5 slight	5	0	3 slight
		2 moderate	0	2	5 moderate
		1 very severe	0	1	
Charles	8	5 very slight	5	0	4 very slight
		1 moderate	1	0	3 slight
		2 severe	0	2	1 moderate
Prince George's	10	4 slight	4	0	5 very slight
		4 moderate	4	0	2 slight
		1 severe	0	1	2 moderate
		1 very severe	0	1	1 severe
St. Mary's	9	1 very slight	1	0	1 very slight
		3 slight	3	0	4 slight
		2 severe	0	2	3 moderate
		3 very severe	0	3	1 severe
Totals	44	6 very slight	6	0	10 very slight
		14 slight	13	1	17 slight
		9 moderate	6	3	14 moderate
		9 severe	0	9	3 severe
		6 very severe	0	6	

Very slight - Loss less than 0.5 per cent.
Slight - Loss 0.5 to 2 per cent.
Moderate - Loss 2 to 10 per cent.
Severe - Loss 10 to 40 per cent
Very severe - Loss 40 per cent or more.

moderate losses occurred when Wildfire was found in the seedbed, only one slight loss occurred when Wildfire was found in the seedbed and all very slight losses occurred when no Wildfire was found in the seedbed. Losses from Mosaic were not very large this year, only three fields with severe losses being found out of the forty-four inspected. However, fourteen fields were found with moderate losses from Mosaic. Ringspot was found in nine of the fields but in no case was there more than very slight losses. A trace of Angular Leaf Spot (Bacterium angulatum) was found in three of the fields. In regard to Mosaic and Wildfire, the survey brought out the fact that the most important source of early infection was the tobacco barn. In Maryland, tobacco is being stripped for market while the next year's crop is being started. Consequently, help will frequently go directly from stripping to weeding seedbeds or setting out tobacco plants in the field. There was considerable evidence that young plants were inoculated with both Wildfire and Mosaic at that time. For the control of tobacco diseases in Maryland there is a greater need for sanitation in the seedbed combined with the adoption by all tobacco growers of a regular program of seedbed spraying with Bordeaux mixture.

TOBACCO DISEASE FIELD SURVEY IN WEST VIRGINIA - 1931

By C. R. Orton

The survey for 1931 extended over the important tobacco districts of Mason, Cabell, Wayne, and Putnam counties, and covers approximately 50 per cent of the tobacco territory. There are many small patches on the dirt roads off the main highways which could not be visited because of the rainy conditions which prevailed throughout the duration of the survey. It is not likely, however, that an extension of the survey to include these outlying districts would materially change the pathological picture.

In comparing this survey with that of 1930, several differences become evident. It would appear that the conditions found in 1931 represent more nearly the average for growth, as well as diseases and insects attacking the crop.

Mosaic (virus) was present in 64 per cent of the twenty-five fields included in the survey. In most of these fields there was but a trace, but two fields showed 25 per cent mosaic and two or three others had a considerable quantity. In one field of ten acres 25 per cent of the mosaic plants were dwarfed as the result of early infection.

Ring spot (virus) was present in 44 per cent of the fields, but in no case was there more than 2 per cent, and in most cases but a trace.

A few plants of Fusarium wilt (F. oxysporum nicotianae) were found in two fields in Cabell County. These plants were taken to the laboratory at Morgantown and the diagnosis verified by cultures.

Angular leaf spot (Bacterium angulatum) was found in 64 per cent of the fields where it varied from 85 per cent to a trace of the plants infected. It can be definitely stated as being the most threatening disease in the tobacco districts of West Virginia, but fortunately natural conditions held it in check this year so that in only three of the surveyed fields will there be any considerable loss.

Black root rot (Thielavia basicola) was almost negligible this year. It was found in four fields, but the maximum infection was only 5 per cent.

Sand drown was noted in only one field where a few spots were evident.

Sun scald was noted in one field in Mason County.

TOBACCO FIELD SURVEY IN SOUTH CAROLINA - 1931

By George M. Armstrong

The field survey of tobacco diseases in South Carolina was conducted during the periods July 13 to 16 and July 23 and 24 inclusive. Fifty-six fields in the four counties, Florence, Marion, Horry, Darlington and one field in Lee County, were examined, making a total 330 acres. The accompanying table (Table 5) summarizes the results.

The most outstanding losses were caused by root-knot (Caconema radicicola) and soreshin, caused almost entirely by Sclerotium rolfsii. The attacks of these organisms were not very noticeable during the first period of the survey but had become very evident 10 or 11 days later. A county agent reported that there were not any diseases of tobacco evident in his county the first day of the survey, but a week later a telegram was received asking me to return to that section because of the diseases in tobacco which had appeared since the recent rains. Root-knot damage was found in 35.9 per cent of the acreage with losses from a trace to 50 per cent. Soreshin was found in 38 per cent of the acreage with losses varying from a trace to 20 per cent. In a considerable number of the fields the attacks of root-knot and soreshin were combined and many plants thus affected were a total loss. Complaints from a district agent of the Extension Service and others indicated that if the entire survey had been delayed 10 days, the situation with reference to root-knot and soreshin would have been found general throughout the tobacco section.

Mosaic was found in 33 fields with 53 per cent of the acreage, the percentage of affected plants varying from a trace to 80. The losses from Mosaic were decidedly less than in 1930, the greatest estimated damage in any field this year being 15 per cent. The serious "blister" or necrosis of mosaic affected leaves were encountered in a high percentage of the plants on some fairly large acreages last season. This year relatively few plants on a small acreage were seen.

Relatively little Angular Leaf Spot (Bacterium angulatum) was observed. Only 65 acres in 10 fields showed a trace to 2 per cent of infected plants and a loss less than one per cent in all cases.

Magnesium Deficiency (sand drown) was found in 5 fields, four of them in a very sandy section around Rains in Marion County and across the Pee Dee River into Horry County. From my own observations and those of some of the agronomists, it appears that this is the most outstanding spot in the state where sand drown can be found. The losses from this disease varied from a trace to at least 25 per cent.

Fusarium Wilt (F. oxysporum nicotianae) was found in four fields with 4.5 per cent of the acreage and was causing losses from a trace to 10 per cent.

A clear case of potash hunger was observed in only one field this year as contrasted to a relatively high percentage of fields showing this deficiency last year (18 per cent).

Three fields, totaling 18 acres, were seen with a rather serious spotting which was evidently of non-parasitic origin. The symptoms did not agree with those caused by the deficiency of any one of the usual elements, but was apparently connected with a lack of balance in the fertilizer.

Table 5. Summary of the tobacco disease field survey in South Carolina, July 12 to 17 and 23 to 24, 1931. Prepared by George M. Armstrong.

	Mosaic	Angular leaf spot	Sore-shin	Root-knot	Magnesium deficiency	Fusarium wilt	Potash Hunger	Hollow stalk	Unknown
Fields	33	10	12*	13*	5	4	1	1	3
	acres		7**	7*					
Acres	176	65	87*	70*	26	15	10	7	18
			38½**	38½**					
Per Cent of acreage	53.3	19.7	26.4	21.2	7.9	4.5	3.0	2.1	5.5
			38.0	35.9					
Per cent affected plants	Trace to 80%	Trace to 2%	Trace to 30%	Trace to 100%	10 to 100	Trace to 12	3		
Per cent loss	Trace to 15%	Trace	Trace to 20%	Trace to 50%	Trace to 25%	Trace to 10%	Trace		

* - Alone

** - Soreshin and root-knot combined.

FRUIT DISEASES

PHONY PEACH INFECTIONS FOUND THIS SEASON

Table 6. Phony peach infections found this season up to September 1, 1931. (Table furnished by Dr. K. F. Kellerman)

State	Infected Trees in Commercial Orchards	Infected Trees in Home Orchards	Total Phony Trees
Alabama	4,881	210	5,091
Arkansas	281	4	285
Florida	130	191	321
Georgia	30,900	761	31,661
Illinois	2	---	2
Louisiana	729	12	741
Mississippi	621	14	635
North Carolina	12	10	22
South Carolina	39	7*	46
Tennessee	34	1	35
Texas	102	105	207
	37,731	1,315	39,046

*Incorrectly reported as 262 in Table 3, Page 120, Plant Disease Reporter, Vol. XV, Number 11, September 1, 1931.

CEREAL DISEASES

OBSERVATIONS ON THE NEMATODE DISEASE (TYLENCHUS TRITICI) OF WHEAT IN THE VICINITY OF LURAY, VIRGINIA

By R. W. Leukel, Associate Pathologist
Bureau of Plant Industry

A trip was made to Luray, Virginia, September 15, 1931, at the request of the Page Milling Co., of Luray. Nematode galls had been observed on the wheat of about a dozen farmers who delivered wheat at the mill.

Most of these farms were visited by the writer in company with Mr. Morrison, C. H. Clark, county agent, Page County, and James Godkin, extension pathologist from Blacksburg, Virginia. From a trace to 2 per cent

of galls was found in the wheat at the different farms. Most of the trouble was traced to one farmer who had sold seed to a number of others.

According to Mr. Morrison, the disease has been present to some extent for several years but in no case was it severe. Its failure to cause heavier losses is easily explained by the fact that the galls undoubtedly are removed from the seed wheat by the thorough cleaning which precedes sowing in this community. Also the practice of following one wheat crop with another on the same land is not very common. Therefore, relatively "Clean seed on clean soil" is the rule rather than the exception. As long as these farm practices are followed in the county the danger of serious losses from this disease is not very great.

FLAG SMUT OF WHEAT IN 1931

Dr. J. A. Faris, Senior Pathologist in Charge of Cereal Smut Investigations has contributed the following statement:

> "In a limited survey made near Alton, Illinois, it was found that flag smut (Urocystis tritici) still persists in fields where susceptible wheat varieties such as Harvest Queen are grown. In Kansas the disease was found in fields from one to several miles outside the limits of the zone where infected wheat was reported on previous surveys. The variety Harvest Queen had the heaviest infection, but some flag smut was also found in fields sown to the varieties Fultz and Michigan Wonder. The amount of smut in these fields ranged from a trace to 6 per cent of the plants, but in small local spots there was as much as 50 per cent infection in a few fields."

STINKING SMUT ON WHEAT IN MARYLAND

The following table shows the results of a survey for stinking smut (Tilletia spp.) made by R. A. Jehle and F. W. Oldenburg in Maryland.

Table 7. 1931 wheat survey for the prevalence of stinking smut in Maryland.

County	Total fields visited	Bearded wheat	Smooth wheat	Estimated acres	Number and per cent of fields with smut: More than 1%	Less than 1%	None or mere trace
Calvert	13	9	4	260	5 :38%	3	5 - 40%
Prince Georges	6	2	4	225	3 :50%	1 :16	2 - 33%
Harford	12	2	10	250	2 :17%	0	10 - 83
Baltimore	14	2	12	650	0	0	14 - 100
Howard	19	7	12	350	8 :42%	1 : 6%	10 - 62%
Montgomery	26	2	24	700	3 :12%	0	23 - 88%
Frederick	43	37	6	1000	17 :40%	9 :21%	17 - 39%
Washington	69	62	7	1950	4 : 6%	0 : 0	65 - 94%
Total Western Shore	202	123	79		42 :20%	14 : 7%	146 - 74%
Worcester	2	2	0	30	1. : 50	0	1. - 50
Dorchester	22	21	1	496	10 : 45%	2 : 9%	10 - 46%
Cecil	49	2	47	1000	7 : 14%	3 : 6%	38 - 80%
Kent	26	21	5	600	6 : 21%	7 : 27%	13. - 50%
Queen Anne	34	31	3	1000	20 : 59%	7 : 20%	7 - 20%
Caroline	33	31	2	550	14 : 42%	8	11 - 44%
Talbot	61	61	0	1500	14% : 22%	14 : 22%	33 - 55%
Total Eastern Shore	227	169	58		72 : 39%	41 : 18%	114 - 50%
Total for the State	429	282	137	10561	114 :25%	55 : 13%	260 61%

VEGETABLE DISEASES

SPROUT TUBER OR NO-TOP POTATOES IN MICHIGAN

Potatoes producing tubers without vines have been reported in previous issues of this volume from Washington (p. 53, June 15), and Pennsylvania (p. 86, July 15). An interesting article on its occurrence in Michigan this year is published in the American Potato Journal for August. (Moore, H. C. Notes on sprout tuber or no-top potatoes. Amer. Potato Jour. 8: 189-192. Aug. 1931.) The trouble was of some economic importance in Michigan in 1918 and has been observed a few times in other years, but its development in 1931 is believed to be the most pronounced of any yet occurring in the State. Observations indicate that it is most severe in those sections of the State where the drought was most serious in September of 1930. Internal brown spot was also observed in potatoes grown in the severe drought areas, serious enough in many instances to cause rejection of the tubers on the market. Both troubles were more common in potatoes from poorer soils. Even in the worst drought affected areas little of either occurred in potatoes from fertile well-prepared soils. The article discusses preventive measures and also gives references to literature.

DISEASES OF TREES

WHITE PINE BLISTER RUST DISCOVERED IN MARYLAND

The discovery of white pine blister rust (Cronartium ribicola) in northern Maryland bordering on the Pennsylvania state line is reported by the Division of Blister Rust Control in the Blister Rust News, volume 15, number 7, page 167. The disease was found by S. B. Detwiler and Henry Putnam on July 16 at three places in the vicinity of Clear Spring, twice on the yellow flowering currant, Ribes aureum, and once on a European black currant bush, R. nigrum. Approximately 10 per cent of the leaves of the black currant were infected, with 95 per cent uredinia and 5 per cent telia. Cultivated red currants on the same property were not infected. Flowering currants were inspected at approximately 40 places in Washington County, Maryland, and Franklin County, Pennsylvania, but rust was found only as noted.

MARKET PATHOLOGY

NEW YORK MARKET PATHOLOGY NOTES

Cyril O. Bratley

Italian prune plums from the Northwest: Blue Mold Rot (Penicillium sp.). Many shipments of the plums arriving during early September showed an average of 3 per cent of the fruit affected with this decay.

Isolations from a prevalent firm decay gave consistently a species of Cladosporium. The decay commonly followed bruises.

Hudson Valley pears: Bartlett and Kieffer pears shipped from the Hudson Valley into New York City during the month have been showing a peculiar pitting. In some cases practically all of the fruit in a shipment were infected. The depressions have the normal fruit color, are usually somewhat circular, one-fourth to one-half inch in diameter and from one-sixteenth to one-fourth inch in depth. The tissue immediately under the spot is dry and rather firm. The similarity of the symptoms to those which might result from abnormal moisture conditions during growth might easily lead to an incorrect diagnosis. The State Entomologists in the Hudson Valley suggest that the pitting may be the result of attack by sucking insects.

Valencia oranges from California: The presence of spots and pits on the surface of the fruit has been more common than has been noted for the past few years. The spots were found mainly near the stem end of the fruit. Isolations from them gave a variety of organisms. Those found frequently were species of Colletotrichum, Alternaria and Fusarium.

Black Mold Rot (Aspergillus niger) especially on oranges held for some time at air temperature was found more frequently than during previous seasons.

Alternaria Rot (Alternaria sp.) was found often during September. In many cases no external symptoms were produced. Often only the central core was affected, the fungus not having penetrated the pulp.

Gravenstein apples from California: Many boxes examined during August showed as high as 50 per cent of the fruit affected with Bitter Pit. Average for those inspected was about 15 per cent. The prevalency of the disease increased markedly as the season progressed.

DISEASES OF SUGAR CROPS

REPORT ON POKKAH-BONG DISEASE OF SUGAR CANE IN GEORGIA

This disease which occurs sporadically throughout the Southeastern States has been found this year in Wilkinson and Twiggs Counties, Georgia. In one 2-1/2 acre field near Danville the infection was first noted early in August, gradually increasing until about 80 per cent of the plants were diseased. Another small field near this one is affected about the same per cent. Several fields in Twiggs County show from 50 to 80 per cent diseased plants.

The causal organism is Fusarium moniliforme. This grows in the bud and on the lower parts of developing leaves. The determination was made by Dr. John A. Stevenson. Only microspores were obtained in cultures. (Julian H. Miller)